CLAIMS

1. A composite porous membrane, which comprises at least one porous membrane comprising an organic polymer and at least one supporting porous membrane adjacent thereto,

wherein the organic polymer constituting the porous membrane penetrates into at least a portion of the surface of the supporting porous membrane adjacent to the porous membrane, and

when the membrane flat surface of the porous membrane is observed using a photomicrograph, the porous membrane has an opening ratio between 10% and 90%, an average pore diameter D (μm) of $0.1 \leq D \leq 50$, a standard deviation σd (μm) of pore diameter of $0 \leq \sigma d/D \leq 0.6$, and the percentage of through-pores to all the pores of the porous membrane of 30% or more; when a membrane section thereof is observed using a photomicrograph, the porous membrane has an average membrane thickness T (μm) defined by $0.05 \leq T/D \leq 2$ and a structure in which pores adjacent to one another communicate with one another therein; and the supporting porous membrane has continuous pores with an average pore diameter of 0.5 D (μm) or more.

2. The composite membrane according to Claim 1, wherein the porous membrane has an average membrane thickness T (μm) of $0.1 \leq T \leq 50$, and the supporting porous membrane has an average pore diameter of 1 μm or more.

3. The composite membrane according to Claim 1 or 2, wherein the porous membrane has an average pore diameter D (μm) of $0.1 \leq D \leq 20$ and an average membrane thickness T (μm) of $0.1 \leq T \leq 20$, and the supporting porous membrane has an average pore diameter between 1 and 100 μm and wherein a standard deviation σt (μm) of the membrane thickness is defined by $0 \leq \sigma t/T \leq 0.5$.

4. The composite porous membrane according to any one of Claims 1 to 3, wherein the porous membrane has an opening ratio between 15% and 80% and an average pore diameter D (μm) of $0.5 \leq D \leq 20$.

5. A blood filtration membrane comprising the composite porous membrane according to any one of Claims 1 to 4.

6. A cell culture diaphragm comprising the composite porous membrane according to any one of Claims 1 to 4, which partitions different cell groups in a cell culture solution so that the different cell groups come into contact with each other, and which is used for co-culture of the cells.

7. A process for producing the composite porous membrane according to any one of Claims 1 to 4, which comprises steps of: allowing a supporting porous membrane to retain a liquid that is not compatible with a solution of an organic polymer in a hydrophobic organic solvent; casting the solution of the organic polymer in the hydrophobic organic solvent on the supporting porous membrane; and evaporating the

hydrophobic organic solvent in an environment wherein a relative humidity is between 20% and 100% near the membrane, so as to form a porous membrane containing said organic polymer as a main component on the supporting porous membrane.

8. The process according to Claim 7, wherein the liquid that is not compatible with the solution of the organic polymer in the hydrophobic organic solvent is water.

9. A process for producing a hemocyte suspension from which leukocytes have been removed, which comprises: passing a hemocyte suspension to be treated through a first filter with a capability of removing leukocytes between 1.0 and 3.5 for 450 cm^3 of the hemocyte suspension to be treated; and then passing the whole hemocyte suspension discharged from the first filter through a second filter comprising one or more composite porous membranes according to any one of Claims 1 to 4.

10. A leukocyte removal filter device comprising a first filter disposed on the entrance side of the hemocyte suspension to be treated and a second filter disposed on the exit side thereof, wherein the first filter has a capability of removing leukocytes between 1.0 and 3.5 for 450 cm^3 of the hemocyte suspension to be treated, and the second filter comprises one or more composite porous membranes according to any one of Claims 1 to 4.

11. The leukocyte removal filter device according to Claim 10, wherein the effective area of the second filter is between 4 and 300 cm^2.

12. The leukocyte removal filter device according to Claim 10 or 11, which has a filter element with a volume between 2 and 18 cm^3.

13. The leukocyte removal filter device according to any one of Claims 10 to 12, which has a capability of removing leukocytes of 4.0 or more for 450 cm^3 of the hemocyte suspension to be treated.

14. A process for culturing cells, which comprises: disposing the composite porous membrane according to any one of Claims 1 to 4 in a cell culture solution to establish at least two culture regions; introducing different cell groups into the at least two culture regions adjacent to each other, respectively, and co-culturing the cells.